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Leibniz' System in seinen wissenschaftlichen Grundlagen. Von Dr. Ernst Cassirer. Marburg, N. G. Elwert'sche Verlagsbuchhandlung, 1902.—pp. xiv, 548.

This is a substantial and an interesting addition to the Leibniz literature. The writer comes to his task with a clearly defined point of view of his own in philosophical matters. This he sets himself to trace in Leibniz as the source of Leibniz's philosophy, and the touchstone for determining what is and what is not really a logical part of his system. The book has both the merits and the defects of such a method. It results in setting aside certain aspects of Leibniz, in particular whatever has an ontological tinge, as representing a mere logical irrelevance, when it is at least possible that an actual problem is involved; and not infrequently, interpretation goes to the verge of transformation in the light of later doctrines. But, on the whole, the thesis is effectively carried out; and the writer shows a familiarity with the concepts of modern mathematical science, as well as with the development of philosophy, which gives the work a value also as a positive contribution to the philosophy of science.

Dr. Cassirer finds the core of Leibniz's philosophy in his contributions to the logic of science. His significance lies in his having grasped the central point of idealistic method. Objectivity is nothing given and complete, external to thought, but the creation of thought itself; the problem of philosophy is epistemological, in the sense of deducing, in the form of a connected system, the methodological moments through which nature is progressively constituted in the scientific experience. The first hundred pages are given to an introductory criticism of Descartes. Descartes's original thought is that of idealistic method. Thought does not copy an existing object; the impossibility of any secure result by this road is the methodological sense of the Cartesian doubt. Science involves the derivation of the object from an original unity of method, which method is found in mathematics. In trying to get a unity of mathematical method, Descartes discovers the general concept of quantity, of which both numbers and figures are examples, and the analytical geometry. The method of analysis is thus a result of epistemological demands, and has for Descartes a fundamental philosophical significance. This demand that the ground of the nature of body be found in thought, governs all the details of his scientific conceptions, even where, as, *e. g.*, in the concept of impact, we have what has the appearance of materialism. It is his failure to be true to this thought which is the source of the theoretical and practical defects of his physics, and of his general concept of reality. While mathematics is rightly made the fundamental basis of all objects of knowledge, he sees the impossibility of solving the problem of concrete existence without going beyond pure mathematics. But in his inability to do this by means of a new principle of reason, he falls back upon sensation as the source of the knowledge of facts, thus giving sensation a connection with ontology. The result is that the object no longer forms the correlate of the subject in the unity of consciousness, but stands over against it. The idea of substance loses its value as an objectifying condition of the object of physics; it gets an ontological significance by its application to God and the soul. The self of the *cogito ergo sum*, originally the system of scientific principles on the basis of mathematics, and so representing an objective interest, changes its logical for a psychological meaning; the problem of knowledge becomes the metaphysical problem of the soul, to which objects are opposed. This reacts on the concept of space, which becomes substantialized and loses its methodological force. Motion has then to be externalized as a mere modification of an existent substance, instead of being constitutive of substance itself. The same unfortunate results appear in the carrying out of the doctrine of method. Experience separates itself from reason as something given, which points to a reality outside consciousness, instead of having an essential connection with reason as the starting point of problems, and the control of hypotheses. Descartes's fault is not that he is too rationalistic, but that he is not rationalistic enough.

It is the purpose of the rest of the book to show how, through the concept of continuity and the insight which is expressed in the differential calculus, Leibniz overcomes the defects of Descartes, and, under the guidance of his original idealistic thought works, out the essential principles of the modern scientific conception. The inquiry divides itself into three parts. The first deals with the fundamental concepts of mathematics, the second with the fundamental concepts of physics, and the third with metaphysics. The opening chapter tries to show that Leibniz, through the influence of mathematics, has practically transformed logic into a science of objective knowledge. This takes shape in the new logical doctrine of definition, as containing the law of the construction of its content. The law of identity is to be interpreted accordingly, not as a mere formal absence of contradiction, but as consistency with the ground principles of science, creatively developed in the definition. The theory of the concept is changed from a sum of given marks, and bases itself upon the act of judgment;

the deepest sense of the idea is grasped as hypothesis. The truth of the idea becomes the truth of the acts of judgment which maintain the possibility of the object of the idea. This now results in a reconstruction of the concept of quantity, in which the various moments are carried back to the act of positing. This frees it from connection with special contents, like space, and grounds it itself in the problem of quality, as the unity of law out of which quantities are derived. Space, which was presupposed in Descartes, has now to be developed logically through the qualitative moment shown in figures. In this way it comes back to an analysis of relations of position. Extension thus ceases to be original, and is created from the unextended point, which is itself not sensibly received, but logically postulated. Absolute space is not a whole of quantity, but a creative principle.

In the origin of the coexistent from the successive, the problem has now been transferred to time. The extended is the diffusion of a quality. Considering first the process, we get the significant moment of Leibniz's thought in the differential concept. The solution of the problem of the continuum is found in the act of continuation — a process. The qualitative unity of law constitutes the concept of the differential, while the integral signifies the quantitative result in so far as it is created in continuous development out of this. The infinite has now become, not, as in Descartes, a limit to knowledge, but a positive moment in the growth of knowledge; it exists not as a quantum, but as the presupposition of finite determinations. Permanence, then, is no longer the property of a thing, but the unity of law in a temporal process. Change is a necessary constituent of reality. This relativity of unity and the manifold is embodied in the new concept of substance, in which it stands as the expression of the law of a series as opposed to its members, and the notion of substance as an ontological fact is overcome.

The possibility of qualitative distinctions, as the prius of quantity, which has its foundation in infinitesimals, is developed in the logic of force, in which we pass from mathematics to mechanics. Here also it is not a question of psychology, but a logical demand for a conceptual fixing of the general process in a unitary time moment. This defines the subject of dynamic determinations, but only in isolation. To pass from abstract mechanics to physics, we must define the functional relation to other contents; and the logic of this demand is traced through its various steps, to its issue in the recognition of the law of conservation as fundamental to the constitution of the object of physics, and the presupposition of the causal relation.

The third section opens with an analysis of the concept of consciousness implied in the foregoing development. This stands for no empirical 'I,' but for the unity of law binding together the manifold of objective appearances. Add the further element of active tendency, and we have the logical basis of the monad, not as a simple being, but as the unity of the act of relating through which appearances become well-grounded phenomena. Monads are not causes of appearances, but representations and principles of the phenomena themselves. Consciousness and nature are thus correlative. The results, however, are still general; there is still lacking the concrete determination of the individual. Here it becomes more difficult to keep what the author conceives as the legitimate and the illegitimate elements of Leibniz's thought apart. The concept of the particular and contingent, representing a real function of knowledge as standing for the endlessness of the problem of scientific determination, receives an attempted solution in a different direction, through the idea of a new kind of knowledge lodged in God, who sees the perfect reason of what to us must ever remain irrational. The thorough-going determination which is posited as the problem of experience is hypostasized; the problem of the individual has changed into that of the *Ding an sich.* Again, however, for Leibniz, this means no transcendental cause of phenomena, but only a problematical new kind of knowledge assumed as actual.

The subjects of the remaining chapters will have to be indicated very briefly: the passage from the individual of immediate self-consciousness, through the postulate of the harmony of the part with the cosmos, to the concept of reality as a system of monads; the transition from abstract laws of motion to biology, through the raising of the monad to the concept of life, and the consequent transformation of the idea of nature; the passage from the biological 'I' to personality, and the freeing of the spiritual sciences alike from theology and empiricism by bringing them under the ideal of scientific method. It is very doubtful indeed whether all this does not bring in points of view that have no place in the writer's clear cut epistemological conception; certainly the treatment is much less satisfactory than in the earlier part of the book. Ethics, æsthetics, and the philosophy of history are briefly treated, and in the final chapter of the section the Theodicy is dealt with, in so far as it has a philosophical as opposed to a theological interest. A concluding section traces the historical development of Leibniz's philosophical point of view in his successive writings.

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